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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,241	01/18/2002	Kevin J. Moeggenborg	100021	8005

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EXAMINER

ROSE, ROBERT A

ART UNIT	PAPER NUMBER
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3723

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,241

Applicant(s)

MOEGGENBORG ET AL.

Examiner

Robert Rose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 18-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's election without traverse of Group I in Paper No. 6 is acknowledged.
2. Claims 18-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, line 3 the use of the alternative phrase "and/or" is deemed to render the scope of the claims indeterminate. Similarly, in claim 12, line 3 the use of the phrase "and/or" is deemed to render the scope of the claims indefinite. MPEP 706.03(d).

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, and 7-8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Japan No. JP-A 302633/1999. The Japanese reference discloses a chemical mechanical polishing system comprising all of the subject matter set forth in applicant's claims above. A liquid carrier and at least one water-soluble amine-

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containing polymer is used in a polishing solution along with a polishing pad to polish wafers. Japan('633) specifically mention the use diethylenetriamine as one example of a suitable polyamine.

7. Claims 1-4, and 7-10 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Wang et al(WO 01/12740). Wang et al discloses a chemical-mechanical system comprising all of the subject matter set forth in applicant's claims above. A polishing solution comprising an amine-containing polymer in a liquid carrier is applied to a polishing pad with or without an abrasive. Note the specific mention of diethylenetriaminepenta(methylene-phosphonic acid) as a suitable additive(column 7, line 5).

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan('633) in view of Tsuchiya et al. Tsuchiya et al disclose a polishing system comprising a higher mono-primary amine to suppress dishing and erosion in polishing of tantalum based metal films. The amines are disclosed as containing four or more carbon atoms, to create a hydrophobic surface to boost the selectivity ratio of the metal to the underlying substrate. Tsuchiya et al also mentions the prior art polishing system of Japan('633), which relies upon polyamines, at column 3, lines 33-41. Tsuchiya et al utilize an oxidizing agent(column 7, lines 35-59) in the polishing system to suppress

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dishing and adjust the polishing rate, and a complexing agent(column 7, lines 60-64) to enhance oxidation of the oxidizing agent. It would have been obvious to those of ordinary skill in the art at the time of the invention, to have incorporated into the polishing solution of Japan('633) a per-type oxidizer, such as a peroxide, as taught by Tsuchiya et al, in order to suppress dishing and adjust the polishing rate. It would have been further obvious to have incorporated a complexing agent into the polishing solution of Japan('633) to enhance the oxidation process, as taught in Tsuchiya et al.

10. Claims 5-6, and 12-17 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lonki et al is cited of interest to show the known use of polyamines in polishing tantalum films on wafers. Payne is cited to show the use of amines in combination with a quaternary ammonium salt(eg. Tetramethylammonium chloride). Carter et al is cited to show the known use of a polishing slurry containing an amine group in combination with an ammonium salt, used in polishing tantalum nitride films. Liu et al is cited of interest to show the known use of diethylenetriamine and it's derivatives as a chelating agent in a polishing composition(page 7, paragraph 0065-0066).

12. Any inquiry concerning this communication should be directed to Robert Rose at telephone number (703) 308-1360.

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March 31, 2004.

Robert Rose
Primary Examiner
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A handwritten signature in black ink, appearing to read "Robert Rose", written over the printed name.